5. The method of claim 4 including attaching the transparent wafer to UV dicing tape before separating the transparent wafer into the plurality of singulated transparent substrates.

6. The method of claim 1 including forming the spacer elements as part of the same vacuum injection technique used to cover the sidewalls of the singulated transparent substrates with a non-transparent material.

7. The method of claim 1 wherein the transparent substrates are in a plane, wherein the optical elements are on a first side of the plane, and the spacer elements are on a second side of the plane.

8. The method of claim 1 wherein the optical elements are formed by an embossing-type replication technique after formation of the spacer elements, wherein the spacer elements are formed as part of the same vacuum injection process used to cover the sidewalls of the singulated transparent substrates with a non-transparent material.

9. The method of claim 1 further including, prior to forming a respective optical element on a surface of each of the singulated transparent substrates, inserting the singulated transparent substrates within openings of a non-transparent wafer that is on the support surface.

10. The method of claim 1 wherein the transparent substrates are in a plane, the method further including:

using a first vacuum injection tool to form the spacer elements on a first side of the plane and to cover the sidewalls of the transparent substrates with a non-transparent material during a first vacuum injection process; and

using a second combined replication and vacuum injection tool to form the optical elements on a second side of the plane during an embossing-type replication process and to form projections on the second side of the plane during a second vacuum injection process.

11. The method of claim 10 wherein the projections serve as non-transparent baffles for the optoelectronic modules.

12. The method of claim 10 wherein the projections serve as alignment features for the optoelectronic modules.

13. The method of claim 10 wherein forming the projections on the second side of the plane includes filling openings in the second combined replication and vacuum injection tool with a non-transparent material.

14. The method of claim 1 wherein the transparent substrates are disposed within openings of a non-transparent wafer that is on the support surface, wherein the transparent substrates and the non-transparent wafer are in a plane, and wherein the support surface has openings adjacent one side of the plane, the method further including:

providing a combined replication and vacuum injection tool on a second side of the plane;

performing an embossing-type replication process to form the optical elements on the transparent substrates; and

performing a vacuum injection process to form the spacer elements and to fill the openings in the support surface with a non-transparent material.

15. The method of claim 14 wherein there are channels through the plane defined by the transparent substrates and the non-transparent wafer, wherein at least some of the channels are next to sidewalls of the transparent substrates, and wherein the channels extend between the openings in the support surface and spaces in the combined replication and vacuum injection tool that correspond to the spacer elements, the method including:

performing a single vacuum injection process to fill the channels, the openings in the support surface and the spaces in the combined replication and vacuum injection tool with a non-transparent material.

16. The method of claim 14 wherein the support surface is a surface of a vacuum chuck.

17. The method of claim 1 wherein the non-transparent material covering the sidewalls of the singulated transparent substrates is a polymer containing a non-transparent filler.

18. The method of claim 17 wherein the polymer comprises epoxy.

19. The method of claim 17 wherein the non-transparent filler comprises carbon black.

20. The method of claim 1 wherein each spacer element has a respective free end, the method further including attaching a substrate wafer to the free ends of the spacer elements so as to form a vertical stack, wherein a plurality of optoelectronic devices are mounted on the substrate wafer.

21. The method of claim 1 wherein each spacer element has a respective free end, the method further including attaching a structural element to the free ends of the spacer elements so as to form a vertical stack, wherein the structural element is on a surface of a substrate wafer on which are mounted a plurality of optoelectronic devices each of which is surrounded laterally by the structural element.

22. The method of claim 21 wherein the structural element includes a metal frame.

23. The method of claim 21 further including separating the vertical stack into a plurality of individual modules each of which includes at least one of the optoelectronic devices and at least one of the optical elements.

24. A method of fabricating optoelectronic modules, the method comprising:

supporting a plurality of singulated transmissive substrates in an apparatus comprising a combined replication and vacuum injection tool;

replicating optical elements onto at least one side of each of the singulated transmissive substrates using an embossing-type replication technique while the singulated transmissive substrates are supported in the apparatus including the combined replication and vacuum injection tool;

using a vacuum injection technique to form a respective spacer feature on a first side of each of the singulated transmissive substrates and to form wall features separating adjacent ones of the singulated transmissive substrates from one another, while the singulated transmissive substrates are supported in the apparatus including the combined replication and vacuum injection tool;

removing from the combined replication and vacuum injection tool a structure comprising the transmissive substrates, the optical elements, the spacer features and the wall features; and

attaching the structure to a support substrate on which a plurality of optoelectronic devices are mounted.

25. The method of claim 24 further including:

forming an opening through each transmissive substrate, each opening disposed over a respective one of the spacer features; and

substantially filling the openings in the transmissive substrates with a material that is non-transparent to light emitted by or detectable by the optoelectronic devices.

26. The method of claim 25 wherein forming an opening includes forming a trench in the transmissive substrate.

27. The method of claim 25 wherein the openings are formed by dicing, micromachining or laser cutting.